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THE GEENTON MITES OF FLORIDA

(Grossman Collection—III)

By ARTHUR PAUL JACOT
U. S. Forest Service, New Haven, Conn.

According to Silvestri, the Geenton comprises the plants and animals which live in the surface soil (including the litter), and such extensions of the earth's surface as boulders, outcrops, stumps, trees. It excludes aquatic and parasitic species.

The first paper of this series covered the box-mites (5), the second the large-winged mites (8). Since these papers were prepared the entire Grossman Collection has been entrusted to me for study and I find 85 more box-mites and 26 more large-winged mites. To the above papers the following notes should therefore be added:

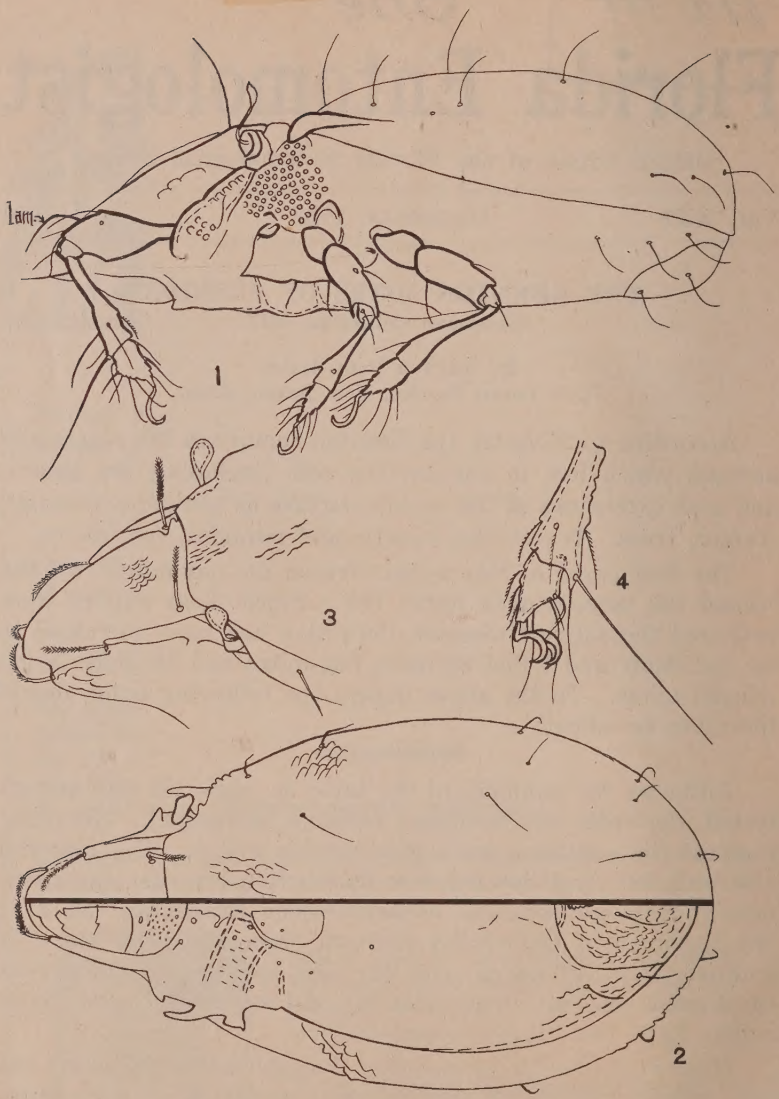
Phthiracaridae

Although the numbers in the table on page 262 (5) are affected, the order of abundance remains unchanged. Naturally most of the additions were *Pseudotritia ardua*. The material also included the following new distribution records: one specimen of *Hoplophthiracarus robustior* from Bradenton (lot 87); one specimen of *Oribotritia glabrata* from Micanopy (lot 74) and one from Key Largo! (lot 92); one specimen of *Oribotritia carolinae* from Vero Beach (lot 67) and one from Lower Matecumbe Key! (lot 31).

Hoplophthiracarus grossmani. I neglected to designate the type in connection with the original description. I now designate as *holotype* the specimen from Pinkoson Springs, Gainesville; slide G33.

Galumnini

The only serious additions to distribution are: two specimens of *Holokalumma coloradensis* from Mulberry (lot 103) and two *Zetes minutus* from Vero Beach (lot 67).



***Dolicheremaeus rubripedes* sp. nov.**

Fig. 1.—Lateral aspect, leg II omitted; ratio x100.

***Exoribatula juglans* sp. nov.**

Fig. 2.—Dorso/ventral aspects, legs and mouth parts omitted; ratio x138.
Fig. 3.—Cephaloprothorax and anterior end of notogaster, dorsolateral aspect, legs omitted; ratio x138.
Fig. 4.—Tarsus I and tibia I; ratio x182.

DOLICHEREMAEUS *gen. nov.*

More or less related to Eremaeus but with long lamellar ridges; four prominent callosities on posterior edge of cephaloprothorax, and at least two complementary callosities on anterior edge of notogaster which is quite distinct dorsally from cephaloprothorax; twenty notogastral bristles; tibiae long, tarsi less than half their length; genuals very short, practically enclosed by pocketlike flange of femora (ungues monohamate).

Type: *Dolicheremaeus rubripedes* sp. nov.

***Dolicheremaeus rubripedes* sp. nov.**

Figure 1

Legs and genital covers (even in balsam mounts) mahogany red; pseudostigmatic organs with small lanceolate head; bristles fairly long, lamellar, inserted laterad of distal end of lamellar ridges, converging, and descending to nearly meet; interlamellar bristles between pseudostigmata, long; disc of notogaster sculptured with fine, apparently incised, jagged lines which trend from anterolaterad to posteromesad; sides of thorax verrucose; sides of cephalon with a few shallow areolations; tectopedia I areolated; anal and paranal bristles fairly long, curved like notogastral bristles; size quite variable: length 0.45 (0.56) 0.62 mm., breadth 0.23 (0.25) 0.28 mm.

Cotypes: Thirty-three specimens from Carpinus litter, station pasture, Experiment Station, Gainesville; taken February 18th, 1936, by J. R. Watson, slide 3521-8.

Three specimens from true moss, Sugarfoot Hammock, Gainesville; taken June 10th, 1928, by J. R. Watson, slides G109D1 to –D3.

Odontocepheus sexdentatus and *O. curtipilus* Tragardh 1931 (Oct. 7) from Juan Fernandez apparently belong in this genus.

***Exoribatula juglans* sp. nov.**

Figures 2 to 4

Diagnostic characters: Surface roughened so as to resemble the shell of the Eurasian walnut; body elongate, depressed; cephaloprothoracic bristles of medium length, blunt, distal half barbulate (figures 2 and 3); notogastral bristles slender, smooth; pseudostigmatic organs short, strongly clavate, flattened (like a tennis racket) (figures 2 and 3).

Description: Color dark brown; size medium, dimension of largest female: length 0.6 mm., breadth 0.33 mm., of largest cotype (female): length 0.58 mm., breadth 0.31 mm., of smallest male: length 0.374 mm., breadth 0.2 mm.; rostrum broadly rounded, rostral bristles bent close to rostrum, meeting on median plane (figure 2); lamello-rostral ridges flattened on lateral face of cephaloprothorax so that only upper edge is distinct; lamellae unsculptured, tapering a little at distal end, though not apparently so in dorsal aspect, lamellar bristles nearly straight, not

extending to distal end of rostrum, interlamellar bristles erect, not longer than lamellar, vertex areolated-pocked; no exopseudostigmatic bristle discernible; anterior edge of notogaster slightly concave, forming a distinct, rounded angle above base of lamellae; notogastral bristles twenty, smooth, some of them barely longer than the cephaloprothoracic bristles, "shoulders" poorly developed, crenulate (figure 2).

Ventral plate much narrower than notogaster; maxillae-coxal plates well developed; sternum slender; parasterna I, II and III each with two bristles on mesal third; mesal end of apodemata II-III meeting at anterior edge of genital aperture *in females* (figure 2), but nearly midway between genital aperture and camerostome *in males* and thus entirely free from genital aperture; mesal end of apodemata IV anteriad of middle of genital aperture in females, only a little more anteriad in males; thus the anal and genital apertures are much more distant (relatively) in the females than in the males; genital covers bearing but two bristles on anterior half! (figure 2); paramesal bristles a little less than length of genital aperture distant from aperture; anal aperture close to posterior edge of ventral plate, each cover with but one bristle of medium length inserted near center of mesal edge (figure 2); adanal bristles only two, of medium length, inserted at sides of aperture.

Legs strong, ungues triheterohamate, central hook only a little heavier than the other two; tarsi I and II short, ventral face bristles ciliate, dorsoproximal quartette well developed (figure 4); tibiae I and II long, tibiae I with dorsodistal process well developed, pointed, major bristle of tibiae I and II very long (figure 4); femora I with very slender flange; femora II with well-developed flange on distal half; dorsal face bristles of femora I and II large, stout, barbulate-ciliate in several ranks. Legs III and IV similarly developed but without well-developed flanges.

I know of no similar species. On the dorsal face the cephaloprothoracic bristles are highly developed, on the ventral face the bristles about the posterior end are well developed.

The females bear six unusually elongate eggs.

Material Examined: One specimen from live oak leaves (litter ?), Fernandina; taken March 8th by Miss Decker, lot 40. One specimen from live-oak litter, east side of bridge, Green Cove Springs; taken April 29th, lot 79. One specimen from oak litter, one mile west of preceding, same day, lot 80. One specimen from live-oak litter, one mile north of Crescent City; taken May 1st, lot 82. *Twelve* specimens from spruce pine litter and small freshly fallen limbs on burned over land, Campville; taken March 18th, lot 47 (cotypes). One specimen from green spanish moss (Tillandsia), four to eight feet from ground, Gainesville; taken January 21st, lot 4. *Nine* specimens from bark of magnolia tree between one to five feet from ground, horticulture grounds, Gainesville; taken March 15th, lot 43. Three specimens from bark of box-wood, same locality; taken March 27th, lot 57. One specimen from true moss, Sugarfoot

Hammock, Gainesville; taken June 10th by J. R. Watson, lot 109.

Quite evidently a tree climber.

***Xylobates imperfecta* comb. nov.**

Galumna imperfecta Banks 1906 (Nov.), p. 492, pl. 16, figs. 21, is an aberrant Xylobates in that the pseudostigmatic organ head is not armed with the usual row of cilia but is truncate and terminated by two or three short bristles or cilia; the rostrum descends in a point; tarsi I are as slender as in Scheloribates, the spine of dorsal face is bristlelike; the ventrodistal spine is quintipectinate, and the dorsodistal apophysis of tibiae I is not developed (thus legs I are more primitive,—not specialized for digging); tarsi II have the two spines well developed; the adalar porose areas are elongate, the lateral mesonotal are also elongate but parallel to sides of notogaster.

The original figures are very misleading.

Originally described from Indianapolis, Indiana (collected by Blatchley), I find 287 specimens in the Grossman collection collected by George F. Weber, May 10th, 1928, from dry leaves, at Key Largo (lot 92). As far as I know this species is known from these two localities only!

Genus FUSCOZETES

Elsewhere (10) I give my reasons for regarding *Fuscozetes fuscipes* of authors as *F. setosus* Koch. This change should be noted in my paper on east American Fuscozetes (7). In that paper I described a subspecies from Florida placing it under *F. bidentatus* because of a similarity in the lamellae. I now regard it as a subspecies of *F. setosus* because it resembles that species in all characters except shape of lamellae and even in this character they approximate the condition in *F. setosus* more than that of *F. bidentatus*. There is one noteworthy difference, the fourth bristle in lateral row is inserted much further posteriad even than in *F. setosus*.

KEY TO EAST AMERICAN SPECIES

1. Distal end of lamellae without cusps; cusp of tectopedia I not reaching insertion of rostrals; fourth lateral bristle of notogaster inserted on transverse plane anteriad of third mesal; ventrodistal bristle of femora II inserted proximad of center of femur.
F. bidentatus

1. Distal end of lamellae with at least one cusp; cusp of tectopedia I surpassing insertion of rostrals; fourth lateral bristle of notogaster inserted on transverse plane posteriad of third mesal; ventrodistal bristle of femora II inserted distad of center of femur. 2

2. Distal end of lamellae with a lateral cusp; lamellar blades well spaced, feebly converging; fourth lateral bristle inserted only slightly posteriad of third mesal. ..... *F. setosus*

2. Distal end of lamellae with a lateral and a mesal cusp; lamellar blades strongly converging V-like; fourth lateral bristle inserted far posteriad of third mesal. ..... *F. setosus floridae*

***Fuscozetes setosus floridae* comb. nov.**

In describing this subspecies (7) two specimens from the Grossman collection were reported. I can now add the following records:

Four specimens from live oak and pine litter, sunny, rather dry, Perry; taken February 2nd, lot 10. Two specimens from leaf litter about azalea bushes, shady place, apiary grounds, Gainesville; taken January 26th, lot 6. One specimen from litter of elders, rather damp, horticulture grounds, Gainesville; taken February 29th, lot 29. *Thirteen* specimens from oak litter, Devil's Mill Hopper, Gainesville; taken April 24th, lot 76. One specimen from long-leaf pine litter, east shore of Newman's Lake, Gainesville; taken March 25th, lot 54. *Fifteen* specimens from long-leaf pine litter, south shore of same, same date, lot 55. One specimen from sweet-gum litter, three miles southwest of Micanopy; taken April 17th, lot 74. *Twenty* specimens from oak litter one mile west on state road from Green Cove Springs; taken April 29th, lot 80. Four specimens from twelve miles from south point on shore of North Beach, St. Augustine; taken April 1st, lot 63. *Nine* specimens from live oak litter, east side of St. John's River, East Palatka; taken April 15th, lot 69. *Six* specimens from water oak litter, one mile east of Mulberry; taken May 17th by Erdman West, lot 103.

Thus seeming to prefer the drier litters (oak), south to the center of the peninsula (Perry to Mulberry).

The species is known north to Ottawa and Maine.

***Oribatella brevicornuta extensa* (6)**

In describing this subspecies nine specimens from the Grossman collection were recorded. I can now add the following records:

One specimen from rather damp elder litter, horticulture grounds, Gainesville; taken February 29th, lot 29. Two specimens from leaf litter, same locality; taken April 20th, lot 75. *Five* specimens from oak litter, upper edge of Devil's Mill Hopper, Gainesville; taken April 24th, lot 76. One specimen from litter, high, dry, under hickory, Pinkoson Springs, Gaines-

ville; taken March 4th, lot 33. Two specimens from long-leaf pine litter, east shore of Newman's Lake, Gainesville; taken March 25th, lot 54. Two specimens from long-leaf pine litter, south shore of same, same date, lot 55. One specimen from sweet gum litter, three miles southwest of Micanopy; taken April 17th, lot 74. One specimen from litter at bottom of the sink "Devil's Hole" at water's edge, two miles north of Edgar (about eight miles from Hawthorne on road to Palatka); taken May day, lot 81. *Forty-eight* specimens from twelve miles from south point on shore of North Beach, St. Augustine (type locality); taken April 1st, lot 63.

From the above records this form seems to enjoy the sea beach. Unfortunately no record of the litter conditions is given for the most favorable sample! From other collections it appears to be related to decaying wood (and its dependents) more than to decaying leaves.

This subspecies ranges north to Iowa, Illinois, and Ohio.

***Propelops pinicus* (9)**

One specimen from pine litter seven miles from Perry towards Mayo; taken April 28th, lot 78. One specimen from leaf litter under hickory, high, dry, Pinkoson Springs, Gainesville; taken March 4th, lot 33. *Fourteen* specimens from sweet gum litter, three miles southwest of Micanopy; taken April 17th, lot 74.

Originally described from the mountains of North Carolina.

PARAPELOPS *gen. nov.*

Similar to Propelops (9) but interlamellar bristles broad (as in Pelops); lamellae slender; no distinguishable translamella; lamellar bristles stout, curving ventrad, and slightly laterad; pteromorphal bridge (in genotype) as in Pelops but not emarginate; porose areas distant their diameter from bristle.

Type: *Pelops bifurcatus* Ewing 1909 (Sept.), p. 118, pl. 2, fig. 3, from Havana, Illinois (length 0.38 mm.).

I have this species from western North Carolina, and from the following localities in Florida:

***Parapelops bifurcatus* comb. nov.**

Three specimens from second growth pine, east of Oscuala Country Club, five miles west of Pensacola; taken March 29th by G. H. Blackmon, lot 61. *Four* specimens from long-leaf pine

litter, south shore of Newman's Lake, Gainesville; taken March 25th, lot 55. One specimen from leaf litter and grass, old laboratory, Bradenton; taken March 14th by George F. Weber, lot 44. *Ten* specimens from same place; taken May 2nd by Weber, lot 87.

Genus ZERCON Koch *Uebersicht*

Koch appointed *Z. dimidiatus* as *type* of his genus Zercon (Uebersicht, vol. 3, Vorwort, p. 6, last paragraph). This leaves the group characterized by *Z. triangularis* without generic designation. I propose for it the term:

TRIANGULOZERCON *gen. nov.*

Type: *Zercon triangularis* Koch (11) fasc. 4:16.

In 1910 (Feb. 12) p. 245 Berlese described *Zercon radiatus* from Lake City, Florida. In 1914 (Dec. 31) p. 136 he published a figure of the dorsal aspect (pl. 3, fig. 48) and expressed doubt concerning its maturity, wondering if it might not be an immature stage of the common *Zercon triangularis*. Evidently Berlese's material was such that he was unable to discern sex characters, and it lacked the dorsoposterior crescentic ridges so characteristic of adult Zercon, and of some of the nymphs. In 1916 (Dec. 31) p. 297 Berlese described what he regarded as the female of *Z. radiatus* (which he now regards as a nymph).

From abundant material of a closely related species from the White Mountains of New Hampshire it is evident that his nymph is not an Ascidae but a Parasitidae. As it is quite distinct, I propose segregating this species in the following genus:

TRIZERCONOIDES *gen. nov.*

Type: *Zercon radiatus* Berlese 1910 (Feb. 12), p. 245; 1914 (Dec. 31), p. 136, pl. 3, fig. 48.

The female which Berlese refers to *Z. radiatus* I rename:

***Zercon misgenatus* nom. nov.**

The specific name, alluding to Berlese's attempt to bed this female with a youth of a foreign race, is designed to warn acarologists of the undesirability of describing new species from inadequate material.

I find no Trizerconoides in the Grossman collection!

LITERATURE CITED

1. BANKS, NATHAN, 1906 (Nov.), New Oribatidae from the United States.
2. BERLESE, ANTONIO, 1910 (Feb. 12), Lista di nuove Specie e nuovi Generi di Acari.

3. ———— 1914 (Dec. 31), Acari nuovi, Manipulus IX.
4. ———— 1916 (Dec. 31), Centuria terza di Acari nuovi.
5. JACOT, A. P., 1933 (Apr.), Phthiracarid Mites of Florida, Jour. Elisha Mitchell Sci. Soc., 48:232-267, pls. 19-22.
6. ———— 1934 (Nov.), A New Four-Horned Mossmite (Oribatoidea-Acarina), The Am. Mid. Nat., 15:706-712, 13 figs.
7. ———— 1935 (Sept.), Fuscozetes (Oribatoidea-Acarina) in the Northeastern United States, Jour. N. Y. Ent. Soc., 43:311-318, pl. 26.
8. ———— 1935 (July, Nov.), 1936 (Dec.), The Large-Winged Mites of Florida, The Florida Ent., 19:1-14, pls. 1-2; 15-31, pl. 3, txt. fig.; pp. 43-47.
9. ———— 1937 (Sept., Dec.), Journal of North-American Moss-Mites, Jour. N. Y. Ent. Soc., 45:353-374, pls. 26-27.
10. ———— 1939, The Pterogasterine Oribatinae of C. L. Koch, Jour. N. Y. Ent. Soc. (forthcoming).
11. KOCH, CARL LUDWIG, 1835-1844, Deutschlands Crustaceen, Myriapoden und Arachniden.
12. ———— 1842, Uebersicht des Arachnidensystems.
13. TRÄGÅRDH, IVAR, 1931 (Oct.), Acarina from the Juan Fernandez Islands, in Carl Skottsberg, The Natural History of Juan Fernandez and Easter Island, 3:553-628, 166 figs.

Index to Vol. XXI will appear in the next issue of
THE ENTOMOLOGIST

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J. W. WILSON, Belle Glade.....*Business Manager*

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REPORT OF THE 1938 ANNUAL MEETING OF THE FLORIDA ENTOMOLOGICAL SOCIETY

At 1:00 p.m. Friday, December 2, the Florida Entomological Society convened in Science Hall at the University of Florida for its annual meeting with President King presiding. After a brief business session the following papers were presented:

The Salt Marsh Mosquito Problem in Florida. Presidential Address, W. V. King, U.S.D.A., Orlando.

The Physiological Effects of Mineral Oil Sprays on Citrus. L. W. Ziegler, Consulting Entomologist, Winter Haven.

Present Status of Knowledge of Tipulidae of Florida. J. Speed Rogers, Biology Department, University of Florida, Gainesville.

Methods Employed in Determining Variability of Leaf Samples from Citrus Trees. J. K. Holloway, U.S.D.A., Orlando.

Distribution of Certain Orthoptera in Relation to Soil Types in Florida. T. H. Hubbell, Biology Department, University of Florida, Gainesville.

Insects Inhabiting "Salamander" Burrows. C. C. Goff, Agricultural Experiment Station, Leesburg.

The presentation of papers was continued at the Saturday morning session, when the following papers were given:

Observations on Mexican Insects. J. R. Watson, Agricultural Experiment Station, Gainesville.

Present Status of Knowledge of Mayflies of Florida. Lewis Berner, Biology Department, University of Florida, Gainesville.

The Possible Use of Phenothiazine in the Control of Three Common Truck Crop Insects of Central Florida. C. B. Wisecup, U.S.D.A., Sanford.

The Lycosid Spiders of Florida. H. K. Wallace. Biology Department, University of Florida, Gainesville.

The regular business session of the Society followed the presentation of the papers.

G. H. Bradley, T. E. McNeel, and B. V. Travis, all of the U.S.D.A. Laboratory, Orlando, were elected to active membership and Wayne P. Dean and J. R. Tremble, graduate students at the University of Florida, were elected to student membership in the Society.

After some discussion of the proposed Constitution and by-laws, it became evident that some changes in these were necessary. The Society voted to postpone final action and adoption of these documents until the next annual meeting.

The Executive Committee was authorized to petition the American Association of Economic Entomologists for affiliate membership in that organization for the Florida Entomological Society.

The officers of the Society for the following year are:

President, J. H. MONTGOMERY
Vice-President, HERBERT SPENCER
Business Manager-Treasurer, J. W. WILSON
Secretary, A. N. TISSOT
Editor, FLORIDA ENTOMOLOGIST, J. R. WATSON
Associate Editor, E. W. BERGER

The register of attendance at the meeting included the following members and friends of the Society:

C. A. Bass
E. W. Berger
Lewis Berner
John T. Bigham
Edwin W. Booth
G. H. Bradley
K. E. Bragdon
K. Paul Bragdon
M. R. Brown
T. J. Cantrall
S. O. Carson
Jeff Chaffin
Henry S. Chubb
John T. Creighton
Wayne P. Dean
J. H. Girardeau, Jr.
C. C. Goff
Coleman J. Goin
J. C. Goodwin
James S. Haeger
S. O. Hill
Homer Hixson
Horton H. Hobbs, Jr.
J. K. Holloway
T. H. Hubbell
W. P. Hunter
Walter L. Kersey
W. V. King
R. A. Knight
T. E. McNeel
G. B. Merrill
Wm. C. Nanney
Max R. Osburn
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J. Speed Rogers
H. B. Sherman
Herbert Spencer
John R. Springer
W. L. Thompson
A. N. Tissot
B. V. Travis
J. R. Tremble
Henry H. True
H. K. Wallace
J. R. Watson
Kathleen V. Wheeler
J. W. Wilson
C. B. Wisecup
L. W. Ziegler

A. N. TISSOT, *Secretary*

NOTES ON A NEW VARIETY OF BLACK WIDOW SPIDER FROM SOUTHERN FLORIDA

B. J. KASTON, New Haven, Conn.

When a species has a distribution as wide as that of the black widow, *Latrodectus mactans* (Fabricius), it is natural to expect a certain amount of variation, and, indeed, many of the forms have been described as distinct species. The spider has been recorded from Canada in the north, to Patagonia in the south, and from the Atlantic to the Pacific. For the United States, Chamberlin and Ivie (1935) distinguished three varieties. These are *mactans mactans,* "from New Hampshire to Florida, and westward into Texas and Oklahoma," *mactans texanus,* and *mactans hesperus,* the latter two being new western varieties. Though there is some mention of a slight difference in the length of the legs, their figures indicate that when taken in relation to the length of the cephalothorax, for example, this can hardly be used as a distinguishing character. The most conspicuous variation concerns the shape and extent of the red and white markings on the abdomen.

Mr. Marshall B. Bishop, of the Peabody Museum of Natural History in New Haven, while on collecting trips around Lake Worth, Florida, during the past two winters procured a large number of specimens of a new variety on which he had made extensive observations.

***Latrodectus mactans* var. *bishopi* var. nov.**

The abdomen of this form is well marked on the dorsum, like the brightest of the typical *mactans mactans.* There are the usual red spots along the mid-dorsal line, and the white splashes laterad. Curiously enough, however, none of the 61 specimens examined has a complete hour-glass mark on the venter. This mark is much reduced; in only six females is there even a suggestion of a posterior portion. In the remaining 47 females and eight males it is reduced to a small triangle representing the anterior portion only. In itself this reduction of the hour-glass mark is not significant, for the same can be observed in many specimens of the typical eastern variety, as already pointed out by Kaston (1937).

The males of this variety are proportionately larger than those of the others, but the most striking character by which this variety can be distinguished from all others is the color

of the cephalothorax and legs. Instead of being dark brown or black they are bright orange in most specimens. In a few they are yellow, and in some brick red! In general structure, including that of the genitalia, this variety agrees with the others. Likewise, the ratio of the length of the leg segments to that of the cephalothorax falls quite close to the figures given by Chamberlin and Ivie for the other varieties.

Type material is deposited in the American Museum of Natural History, which also has a single female from Orange County collected by Dr. H. K. Wallace, Sept. 5, 1934.

Contrary to the usual habit of the species, the members of this variety do not build their webs under stones or debris, etc., near the ground. Instead, they are commonly found in webs built three to more than four feet from the ground. The preferred habitat seems to be in dry areas where the light palmetto grows. The webs are stretched from one palmetto to another and may be more than two feet across. They have much the appearance of a sheet web after the fashion of a *Linyphia*, rather than the irregular network of a theridiid. Mr. Bishop informs me that the web appears always to be associated with the small nest of a wasp which builds at the base of the palmetto leaves. The spider usually stands near this wasp nest while waiting for prey to strike its web.

It is interesting to note that Petrunkevitch (1910) reports a somewhat similar type of web-building in a black-legged variety of southern Mexico. This builds its web some six feet above the ground among the branches of cactus. However, around Lake Worth the black-legged *mactans mactans* can be found in the same areas in which var. *bishopi* occurs, the former under stones, etc., near the ground.

During the latter half of February the sexes are mature, and several males can be found on the web of a single female. The first egg sac was observed on February 22, 1938.

LITERATURE CITED

CHAMBERLIN, R. V. and IVIE, W. 1935. The black widow spider and its varieties in the United States. Bull. Univ. Utah, XXV (8):1-29.

KASTON, B. J. 1937. The black widow spider in New England. Bull. New England Mus. Nat. Hist., No. 85, pp. 1-11.

PETRUNKEVITCH, A. 1910. Some new or little known American spiders. Ann. New York Acad. Sci., XIX:208-209.

A REMARKABLE FLIGHT OF BUTTERFLIES

By J. R. WATSON

In the afternoon of August 25, last, in and about the city of Monterey, Mexico, the writer ran into the most remarkable flight of butterflies he has ever seen. The species involved was the snout butterfly, *Libythae carinenta,* which Holland considers only a pale variety of the common snout butterfly of the east, L. bachmani. The flight was literally a brown snowstorm. A common method of estimating the abundance of butterflies in a flight is to mark off a line about 100 feet long and count the number that pass this line in a minute. In the case of this flight this was impossible. A conservative estimate was a butterfly for every cubic ~~foot~~ yard of air space, and they extended up to a height of 30 or 40 feet, and at least every 2½ seconds this cubic ~~foot~~ yard would be occupied by another butterfly. At that rate, in the flight there would be well over 2000 butterflies pass a 100 foot line every minute. When they struck the buildings in Monterey they went to the very tops of the buildings. They may not have been that high in the open country.

It was the day before the hurricane, rather quiet, and the wind was from the southeast, and the flight was against the wind. We ran into the flight about ten kilometers southeast of Monterey. As we ascended the mountains to Chipinque Mesa we passed out of the flight although there were many of these butterflies on the blossoms on the "mesa". These rose and resumed flight about 10:00 a.m. the next morning. At 4:00 p.m. the rain started and of course no further flight was observed.

LABORATORY STUDIES OF POISONED BAITS FOR THE CONTROL OF THE SOUTHERN ARMYWORM

(Continued from Vol. XXI—No. 3, p. 47.)

None of the interactions were significant except the quadruple remainder, indicating that the effect of each factor was very marked and due entirely to its own characteristics, i. e., a change in any one factor did not produce a significant change upon another except where all factors were operating together.

It should be pointed out that in order to bring out in this experiment the effects of the other ingredients, phenothiazine and paris green were purposely tested at a lower rate than would be expected to give satisfactory mortalities. Therefore the resulting low mortalities should not be interpreted as mean-

ing that these materials are of no practical value in baits for this insect. On the contrary, they may prove as effective as cryolite if used at sufficiently high concentrations. This possibility is worthy of consideration.

TABLE 5.—MORTALITY BY VARIABLES OF EACH FACTOR.

Factor	Variable	Mortality	Difference
Bulk	Corn meal	64	3
	Cottonseed meal	61	
Poisons	Paris green	89	53
	Phenothiazine	36	
Syrup	Present	78	31
	Absent	47	
Lemon	Present	58	9
	Absent	67	
Difference required for significance			19

CONCLUSION

The effect of varying the ingredients of southern armyworm baits was studied in laboratory experiments designed factorially and analyzed accordingly. This resulted in a saving of time and aided considerably in the accurate interpretation of the data. Corn meal and cottonseed meal were demonstrated to be good substitutes for each other in these baits. Lemon was valueless, while syrup definitely increased the effectiveness. The presence of natural food decreased the mortalities obtained with the baits, demonstrating the desirability of supplying this insect with an abundance of natural food when testing baits, if the results are to be useful. It also demonstrated the desirability of the development of additional attrahents.

Cryolite was the only poison that gave satisfactory results in any combination in the presence of natural unpoisoned food. Paris green was second in effectiveness, followed by phenothiazine and cube. Cube was worthless, while phenothiazine gave some mortality and in view of its safe qualities may be considered promising when used at a relatively high rate.

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